DOCUMENT RESUME

ED 410 711 EC 305 602

TITLE Working Together: Science Teachers and Students with Disabilities. DO-IT Program.
INSTITUTION Washington Univ., Seattle.
SPONS AGENCY National Science Foundation, Arlington, VA.
PUB DATE 96
NOTE 7p.; Additional funding received from NEC Foundation of America and US WEST Communications.
AVAILABLE FROM DO-IT, 4725 131th Avenue NE, University of Washington, Box 354801, Seattle, WA 98195-4327; telephone/TTY: 206-685-DOIT; Fax: 206-685-4161.
PUB TYPE Guides - Non-Classroom (055)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Access to Education; *Disabilities; Educational Strategies; Elementary Secondary Education; Higher Education; *Science Instruction; Science Laboratories; Science Materials; *Teacher Role
IDENTIFIERS *Academic Accommodations (Disabilities); *Testing Accommodations (Disabilities)

ABSTRACT

This brochure describes ways that science teachers and students with disabilities can work together to develop creative alternatives for the challenges in gaining and demonstrating knowledge faced by these students. In the first section, "Gaining Knowledge", lists of difficulties faced by students with disabilities are placed in columns opposite to types of accommodations. Some of the accommodations described include: providing materials in alternative formats; providing scientific equipment with Braille and large print markings; providing an FM system or interpreter; making electronic communications available; providing extra time and access to materials via a computers equipped with speech and large print output; and flexible scheduling arrangements for students who have health impairments. The second section "Demonstrating Knowledge", details accommodations that can be made for students with disabilities who cannot demonstrate mastery of a subject by writing, speaking, or working through a problem in a lab. Accommodations include providing worksheets and tests in alternative formats, allowing extra times or alternative testing arrangements, and providing in-class access to a computer with alternative input devices. The brochure includes a list of key electronic resources at the University of Washington related to the DO-IT (Disabilities Opportunities Internetworking Technology) program. (CR)

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Working Together: Science Teachers and Students with Disabilities

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Working Together: Science Teachers and Students with Disabilities

As scientific fields make increasing use of technology, new opportunities emerge for people with a variety of abilities. When students with disabilities and science teachers form learning partnerships, the possibilities for academic and career success multiply.

Some students with disabilities have conditions that are invisible; some are visible. Since each person's situation is unique, the best solutions for maximizing participation come about when the student and teacher work together to develop creative alternatives for challenges faced by students with disabilities. Such challenges include gaining knowledge and demonstrating knowledge. In most cases, it takes just a little creativity, patience, and common sense to make it possible for everyone to learn and contribute.

Gaining Knowledge

Many students with disabilities face challenges to gaining knowledge. Examples of specific challenges and accommodations follow.

The student who has difficulty...	can be accommodated by...
...reading standard text or graphics due to visual impairment	...materials in large print or Braille, on tape, or via computer; enlarged or tactile drawings; access to adaptive technology that provides enlarged, voice, and/or Braille output.
...seeing materials on blackboard or overhead projector due to visual impairment	...binoculars; verbalization of the content and oral descriptions of all visually displayed materials.
...reading output from standard equipment because of visual impairment	...interfacing lab equipment with computer and providing large print and/or speech output; scientific equipment with Braille and large print markings.
...hearing presentations and instructions	...FM system; interpreter; printed materials; facing student for lip reading; overhead projector or blackboard.
...hearing multimedia and videotaped presentations	...captioned presentations; interpreter.
...participating in class discussions due to hearing or speech impairment	...electronic communications (e.g., Internet) where the ability to hear or speak is not required; portable computer with speech output.

...understanding concepts due to a specific learning disability	...visual, aural, and tactile demonstrations incorporated into instruction.
...reading because of a specific learning disability	...extra time and access to materials via a computer equipped with speech and large print output and Internet access.
...taking notes in class because of mobility or visual impairment	...in-class access to a computer with adaptive technology and a word processor.
...operating lab equipment and conducting lab experiments due to mobility impairment	...accessible facility; adjustable-height tables; lab partner; scribe; computer-controlled lab equipment with alternative input devices (e.g., speech, Morse code, alternative keyboard); modified scientific equipment.
...seeing demonstrations while seated in a wheelchair; viewing lab experiments	...adjustable height tables and flexible seating arrangements.
...completing an assignment or lab because of a health impairment	...flexible scheduling arrangements.
...doing research	...information accessible on computer (disk, Internet) with adaptive technology.

Demonstrating Knowledge

Some students with disabilities cannot demonstrate mastery of a subject by writing, speaking, or by working through a problem in a lab. Many of the accommodations for gaining knowledge can help the student demonstrate mastery of a subject as well. Examples of other accommodations follow.

The student who has difficulty...	can be accommodated by...
...completing and submitting worksheets and tests because of visual impairment and/or specific learning disability	...worksheets and tests in large print or Braille, on tape, or via computer; access to adaptive technology that provides enlarged, voice and/or Braille as well as standard print output.
...completing a test or assignment because of a disability that affects the speed at which it can be completed	...extra time or alternative testing arrangements.
...completing a test or assignment because of the inability to write	...in-class access to a computer with alternative input (e.g., Morse code, speech, alternative keyboard) devices.

Key Electronic Resources

•To contact staff, request electronic copies of DO-IT NEWS, request publications or ask questions about the program, send electronic mail to *doit@u.washington.edu*

•To send a message to all DO-IT Scholars or all mentors, send electronic mail to one of the following addresses:
doitkids@u.washington.edu
mentors@u.washington.edu

•To discuss issues pertaining to individuals with disabilities and their pursuit of science, engineering, and mathematics (sem) academic programs and careers, subscribe to the doitsem LISTPROC discussion list by sending electronic mail to listproc@u.washington.edu. In the message text type "subscribe doitsem" followed by your name.

•For information resources related to DO-IT, disabilities, adaptive technology, science, engineering, mathematics, and post-secondary education, access the DO-IT gopher server by typing at your host system prompt
gopher hawking.u.washington.edu

•DO-IT also maintains a World Wide Web home page at
http://weber.u.washington.edu/~doit/

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DO-IT Funding

Primary funding for the DO-IT program is provided by the National Science Foundation. Additional grants have been received from NEC Foundation of America and US WEST Communications. The University of Washington also contributes substantial resources to this project.

Additional partners include:

Advanced Networking and Services; Albertson College of Idaho in Caldwell; Apple Computer; Battelle Pacific NW Laboratory; Clark College; Communications Technology Center; DTP Micro Systems; The Evergreen State College; Ford Motor Company; Grand Coulee Dam School District; Idaho State University in Pocatello; Institute for Science, Engineering and Public Policy; Kiwanis; Lawrence Livermore Supercomputer Center; Lemman College; Microsoft/Pacwest District; NEC Foundation of America; NorthWestNet; Oregon State University; Pacific Science Center; Portland State University; Skagit Valley Community College; Southern Oregon State College; U.S. West Communications; University of Puget Sound; Washington Access Services for Post-Secondary Students with Disabilities; Washington Library Network; Washington North Central Educational Service District; Washington School Information Processing Cooperative/ WEdNet; and WTAC Assistive Technology Resource Center.

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